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SUPPLEMENT TO REPORT NO.

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THIS IS UNEVALUATED INFORMATION

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Obertannwald, Czechoslovakia

1. The main task of the Fernseh GmbH at Obertannwald was the development of the "Tonne" television viewing head for radio controlled glide bombs. [redacted] the principal specifications of the small transmitter of the "Tonne" system were as follows:

   a. Power output: 5 watts
   b. Frequency: 73 cm
   c. Number of lines: 441
   d. Frames per second: 25 non-interlacing.

2. Approximately 100 tansmitters and cameras and 20 receivers for this system were constructed at Obertannwald. All but 10-15 transmitters and cameras were transferred to the German Luftwaffe for test purposes prior to the end of World War II. All of the remaining equipment in

addition to the leading German specialists from Obertannwald were deported to the USSR in December 1945. A few "Tonne" units are known to have been taken directly to Institute 160, Fryazino, [redacted] 25X1
25X1 [redacted] the majority were taken to Institute 380, Leningrad, and possibly some to Moscow. During the development of "Tonne" at Obertann-
25X1 wald, [redacted] the development of the high frequency portion of the receiver and associated test equipment. [redacted] 25X1
25X1 [redacted] the equipment on test flights in Jesau (East Prussia), Peenemuende, and Ainring (near Munich) in 1941 and 1942. [redacted] the results that were obtained were extremely poor, due primarily to excessive maintenance in keeping the equipment operational and the fact that the target was usually lost during the last part of the bomb run. The latter difficulty was caused by the vertical angle at which the camera was installed in the nose of the bomb, and its limited field of vision. When the near vertical angle of the bomb was changed in order to effect a hit during the latter part of its fall, the position of the camera in the nose precluded observation of the target by the operator in the aircraft.

Institute 160, Fryazino

3. In December 1945 the Soviets evacuated the entire facilities of Fernseh/Obertannwald to Institute 160, Fryazino. Fifteen to twenty German specialists and their families were included in the move. [redacted] 25X1
25X1 [redacted] no work was done with the "Tonne" equipment at Institute 160, although three sets were cannibalized for components to be used in the development of commercial television equipment. [redacted] 25X1
25X1 [redacted] developing studio measuring equipment for the Moscow television station and domestic television receivers. [redacted] 25X1
25X1 [redacted] developed and constructed a complete television receiver which was to be used as the prototype for those later produced at Institute 380. The complete receiver was not adopted for production, although some of the circuitry is currently used in the T-1 and T-2 receivers. In March 1948 all the German television specialists were transferred to Institute 380, Leningrad.

INSTITUTE 380, LENINGRAD

General

4. Institute 380 is divided into two branches--the "Lesnoy" branch, which comprises the Measuring Equipment Department and the Military "Secret Department", and the "Fontanka" branch, which consists of development departments for television broadcast station studio equipment and domestic television receivers. The personnel complement of the institute approximates 2000 persons, of whom about 1/3 are employed in the "Fontanka" branch, and the remainder in "Lesnoy". Although development of studio equipment is carried through to actual construction (equipment for Moscow and Leningrad stations has been completed--that for the Kiev station is now under construction), the work of the institute on television receivers does not include quantity production. Development of T-1 and T-2 receivers proceeds on a continuing basis in the institute, while actual production is effected by factories in Moscow and Leningrad. The T-1 is produced in Moscow (plant unknown) and the T-2 at Zavod Kazitskiy, Leningrad. Limited production of iconoscopes and image orthicons is carried out in Institute 380 for use in television cameras. [redacted] 25X1
25X1 to where television transmitters are developed and constructed in the USSR, [redacted] this work is done by a plant in Moscow which employs only Soviets. [redacted] 25X1 Soviet engineers frequently came from an unknown establishment in Moscow to attend conferences on studio equipment development.

[redacted] 25X1

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5. [redacted]

Measuring Equipment Department

25X1 6. [redacted] at Institute 380 all departments were located in what is now known as the "Lesnoy" branch, but in the summer of 1949 a gradual movement to the "Fontanka" branch commenced. By early 1952 only the Measuring Equipment Department and the military "Secret Department" remained in "Lesnoy". The Measuring Equipment Department also is scheduled for transfer to "Fontanka" which will leave the entire building for use of the "Secret Department".

7. The department is divided into three sections: one for issuing and receiving measuring instruments used throughout the entire institute; one for instrument repair; and the third for the development and construction of measuring equipment used not only in Institute 380 but, 25X1
[redacted] for all other establishments concerned with television. 25X1
[redacted] the fact that small quantities of equipment were occasionally shipped to outside destinations, [redacted] 25X1
Native American and German test gear was used exclusively until approximately two years ago, at which time small scale production of native Soviet types began. Among the American types of equipment present were the following:

a. General radio type 804 signal generators
b. Boonton type 150 (?) signal generators
c. Dumont oscilloscopes
d. Jackson universal measuring instruments

8. Three German engineers and approximately 40 Soviets were employed in this department. About 300 square meters of floor space was allocated. In developing the pilot models of equipment, German components from Obertannwald were used, but serial production utilized Russian components entirely. No shortage of components was evident and no particular difficulties were experienced in production.

9. During the first three months at Institute 380 (March to June 1948), 25X1
[redacted] test equipment for the Moscow television center. 25X1
[redacted] the development of a sweep generator /see Enclosure (A) for a block diagram of this instrument/ which was completed in March 1949. Approximately 200 units of this instrument were produced under the following specifications, for use in testing IF and video amplifiers of television receivers:

a. CRT display
b. RF range: 100 kc to 25 mcs continuous tuning
c. Sweep: 8 mcs
d. Output: 1 mv to 1 v at 150 ohms

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10. During the same period in which the sweep generator described above was developed, the development and production of approximately 40 suitcase-sized universal test instruments for television receiver maintenance was carried out. This instrument consisted of (1) a sweep generator which covers three VHF ranges (48-58 mcs; 56 to 66 mcs; and 74 to 84 mcs) and two IF ranges [redacted] 25X1 (2) an ordinary oscillograph; and (3) a volt-millimeter. [redacted] 25X1
25X1 [redacted] due to the lack of suitable equipment in the television receiver factories located in Moscow and Leningrad, these portable instruments were used to align and test production receivers.

11. Following completion of the above work in March 1949, a spectrum analyzer was developed and produced in approximately three months for the military "Secret Department" /Enclosure (B) is a block diagram of the spectrum analyzer/. The frequency range of this instrument is 5 kc to 3.5 mcs in three ranges of 5 to 50 kc, 50 to 500 kc, and 500kto 3.5 mcs. A sweep oscillator allows display on a cathode ray tube the entire spectrum of any one of the three ranges. The input sensitivity is 1 mv.

12. During 1949 approximately 20 to 30 instruments were developed and produced for measuring the picture modulation percentage of television transmitters. These instruments were originally developed for use with the Leningrad television transmitter and later were also decided to be used in connection with projects undertaken in the military "Secret Department". The Measuring Equipment Department was concerned with the development of the instrument from the intermediate frequency stages to the indicator. For its own use the "Secret Department" constructed the high frequency portion, [redacted] 25X1 was to operate on a wavelength of approximately 30 cm, having once briefly observed this portion of the equipment. /Enclosure (C) is a block diagram of this equipment, commencing with the IF amplifier./

13. In January 1951 production started on about 40 units of a square wave oscillograph to be used for measuring the transient response of amplifiers. This equipment will measure the rise time to .04 microseconds of a pulse with a very straight leading edge. /See Enclosure (D), a block diagram of the square wave oscillograph./

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14. During the first half of 1950, several sweep generators for the ranges 20 to 80 mcs, 75 to 100 mcs, and 150 to 200 mcs were constructed.
[redacted]
25X1 [redacted] During this same period an oscillograph similar to the Dumont 280 was also developed.

Military "Secret Department"

15. The chief of this department, Zakharov, was responsible for movement of the Fernseh/Obertannwald group to the USSR. No Germans worked in this department or were ever allowed admittance, and the Soviet employees were not allowed to speak to other institute employees, Germans or Soviet. [redacted] 3000 to 4000 square meters of floor space are allocated to this department of the "Lesnoy" branch and that about 1200 people are employed.

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25X1 16. [redacted] the majority of iconoscopes produced (copies of the German type IS-9) by the High Vacuum Department /see Para 27/ were for the use of this department. A German, Hugo Maner, employed as an iconoscope specialist, estimated the production to be about 30 per month. Since only two per month went into ordinary television development done by the other departments of the institutes, he

[redacted] 25X1

stated the belief that the other 28 were intended for use by the "Secret Department". [redacted] a 4-element Yagi antenna, mounted on the roof of the "Lesnoy" branch building, appeared to be cut for a wavelength of approximately 70 cm. This fact, plus the use of the majority of the IS-9 iconoscope production, [redacted] 25X1 further development of the "Tonne" system is taking place in the department. (The original "Tonne" used the IS-9 iconoscope and operated on a wavelength of approximately 70 cms.) Occasionally equipment very similar to the original "Tonne" was seen being taken in and out of the department. From the distance at which observation was possible, no discernible differences could be detected. Because movement of the equipment was irregular and infrequent, and from the fact that only one complete set was ever seen at one time, [redacted] 25X1 25X1 it was being taken to some destination for operational tests.

17. [redacted] 25X1

18. Visitors known to be associated with this department were frequently seen in the institute canteen. In fact, it was very seldom that four or five Soviet Air Force officers were not present for periods of 5 to 6 weeks per group. [redacted] 25X1 25X1

19. Due to the absence of any quantities of components observed going into the department (with the exception of the assumed 28 iconoscopes monthly) or finished equipment coming out, [redacted] 25X1 25X1 quantity production of equipment does not take place in this depart- 25X1 [redacted] 25X1

Television Receiver Development

20. All Germans who were employed in this department were repatriated in December 1950. To my knowledge, the only work ever done was concerned with the development of T-1 and T-2 receivers. Quantity production

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was not undertaken, but merely small serial production to assist in the continued development of these two receivers. 25X1

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21. In the beginning of 1951 the T-3 model had been placed in production by an unknown plant in Moscow. It should now be ready for public purchase. This instrument is classed as a luxury model for use by hospitals, clubs, and high-ranking party members, and features a larger screen and a built-in radio and phonograph. Prior to transfer of the television specialists from Institute 160 to Institute 380 in March 1948, a model was developed which was scheduled to be known as the T-3 but was not accepted for production because the Soviets claimed it was too "Prussian" in appearance.

Laboratory for Wide Band Amplifier Development

22. This laboratory was under the jurisdiction of the department concerned with the development and production of television studio equipment. 25X1 Although reasons were never made known, the laboratory experienced a turnover of supervisors approximately every six months.

Laboratory for Television Camera Development

23. 25X1

25X1 work was being done on color television and that a simple type of color transmission was performed on an experimental basis. 25X1

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Laboratory for Deflecting Devices

25X1 24. this laboratory was concerned with conventional techniques used by West Germany and the US on beam deflection devices for cathode ray tubes and television cameras. Emil Siegel, a German engineer, worked in this laboratory. Siegel is now employed at the Zentral Laboratorium in Berlin-Adlershof.

Laboratory for Synchronizing Generators

25. 25X1

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Optical Laboratory

26. Work on color television is probably being pursued; 25X1

High Vacuum Department

27. Part of this department was concerned with conventional work on kinescope development and production of approximately 30 copies per month of the German IS-9 iconoscope. A section of the department, restricted from observation of the Germans and believed to be associated with the military "Secret Department", was concerned with

image orthicon development and [redacted] produced approximately five per month as pilot models. [redacted] a picture produced by one of the image orthicons and reported the quality to be approximately the same as that produced by a good iconoscope. Soviet copies of the German IS-9 iconoscope had an extremely short life (a few days in operation) in contrast to the German prototype. For this reason most of the iconoscopes used in the Leningrad television center were of native German construction.

28. [redacted] the greatest difficulty experienced by the Soviets in iconoscope production was due to lack of attention to the impurity content of materials and to improper construction "sanitation" practices. [redacted]

Soviet Engineers at Institute 380

29. [redacted] Soviet engineers [redacted] had absolutely no desire to do independent original work. Success was generally measured by the ability to copy American equipment well enough for it to operate in a satisfactory manner. From December 1950, at which time the Germans were taken off active projects, until April 1952, absolutely nothing new was developed or even copied in the Measuring Equipment Department. [redacted]

30. [redacted] the education of Soviet engineers is currently directed toward proficiency in copying work done by Western countries. For his diploma thesis, the prospective engineer is only required to describe the technical characteristics and operation of a piece of equipment already developed and constructed. [redacted] when copying American test equipment, the Soviets did not attempt any improvements or possible simplifications but strove for a "Chinese" copy. Once, when a General Radio type 104 signal generator was being copied, two holes in the chassis which were not used for any purpose were faithfully copied by the Soviets for the sake of completeness.

Nominal List of Soviet Personalities at Institute 380

31. [redacted] the following Soviets were employed at Institute 380:

Baranov

Believed to be Chief of the Television Receiver Development Laboratory in the "Secret Department". Age 35-36. Home address: Stalin Prospect 179.

Dubinin

Technical Director of Institute 380. Holds degree of "Kandidat". Age about 50. Speaks English. [redacted] he spent some time in the US, [redacted] Home address: Stalin Prospect 179.

25X1 [redacted]

Koenigson

Former chief of the Receiver Development Department. Died March 1952.

Professor Dr Kreytser

Chief of the Studio Equipment Department. A grandchild of the composer Kreutzer, who has changed the spelling of his name. Age 45-50. Speaks German fluently. Home address: Stalin Prospect 179.

Krussar

Chief of the High Vacuum Department, [redacted] a doctor of technical sciences. Age about 50. 25X1

Levit

25X1 [redacted] Chief of the High Frequency Laboratory of the military "Secret Department". Spent several years with Telefunken in Germany prior to World War II. Speaks fluent German. Was occasionally used as an interpreter. Age 42-45. Home address: Stalin Prospect 179.

Mitelman

Chief of the Measuring Equipment Department. Age 36-37. Has "Aspirant" degree. An average engineer by German standards, but good by Soviet.

Moyseyev

Director of Institute 380. Age 45-50. Home address: Stalin Prospect 179.

Zakharov

Chief of military "Secret Department". Age 35-36. Responsible for deportation of German television specialists to the USSR.

Sokolov

Chief of the Optical Laboratory. Age about 45.

Tovbin

Deputy to Koenigson and succeeded him as Chief of the Receiver Development Department. Age about 40.

Valik

Chief of the Laboratory for Wide Band Amplifiers, as of April 1952.

Voronov

Chief of the Laboratory for Synchronizing Generators. Age about 40.

Sapozhnikov

Chief of the Laboratory for Television Cameras. Age about 40.

(Moyseyev , Kreytser, Levit, Baranov , and Dubinin live in the same apartment building as I--Stalin Prospect 179. Stalin Prospect is the main street leading to the Leningrad-Moscow highway.)

DOMESTIC TELEVISION IN THE USSR

25X1 32. [redacted] Institute 380, the department responsible for development and construction of television studio equipment was rapidly nearing completion of the equipment for the Kiev station. Kiev was scheduled

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to commence operation in May 1952. The next station under consideration was to be located in Sverdlovsk. Work was also being done on the installation of a coaxial cable between Moscow and Leningrad. The Moscow-Kalinin section was completed in April 1952 and proved to be satisfactory in operation. [redacted] the desirability of a centimeter or decimeter relay system between Moscow and Leningrad, but the decision was reached in favor of the coaxial cable installation. [redacted] decimeter wavelength spot reporting television equipment was being used within the city of Leningrad, [redacted]

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33. [redacted] a television receiver [redacted] able to receive the Leningrad station quite well. Transmission data of the Leningrad station are as follows:

a. Picture carrier: 49.75 mcs
b. 625 lines
c. 50 frames per second interlaced
d. Sound carrier: 56.25 mcs
e. Picture modulation: Amplitude
f. Sound modulation: Frequency
g. Antenna polarization: Horizontal

The Leningrad station operated four nights per week for a 4-hour period. In addition, major sports events were televised when scheduled and a children's program was transmitted each Sunday at noon. The average program consisted of newsreels and movies which expound the regular Soviet political theme. Sometimes a ballet or opera was telecast. [redacted] the number of antenna installations, a great many television receivers were in use in the city of Leningrad. [redacted] Reception was excellent within a 50 km radius of the transmitter.

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NOTES ON OTHER RUSSIAN TECHNICAL INSTITUTES

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34. [redacted] Institute #34, which is located near the "Lesnoy" branch of Institute 380, was engaged in work on capacitors, resistors, crystal detectors, and possibly transistors. [redacted] quantity production was taking place in the institute. It is possible, [redacted] that machinery for capacitor production was developed and constructed there.

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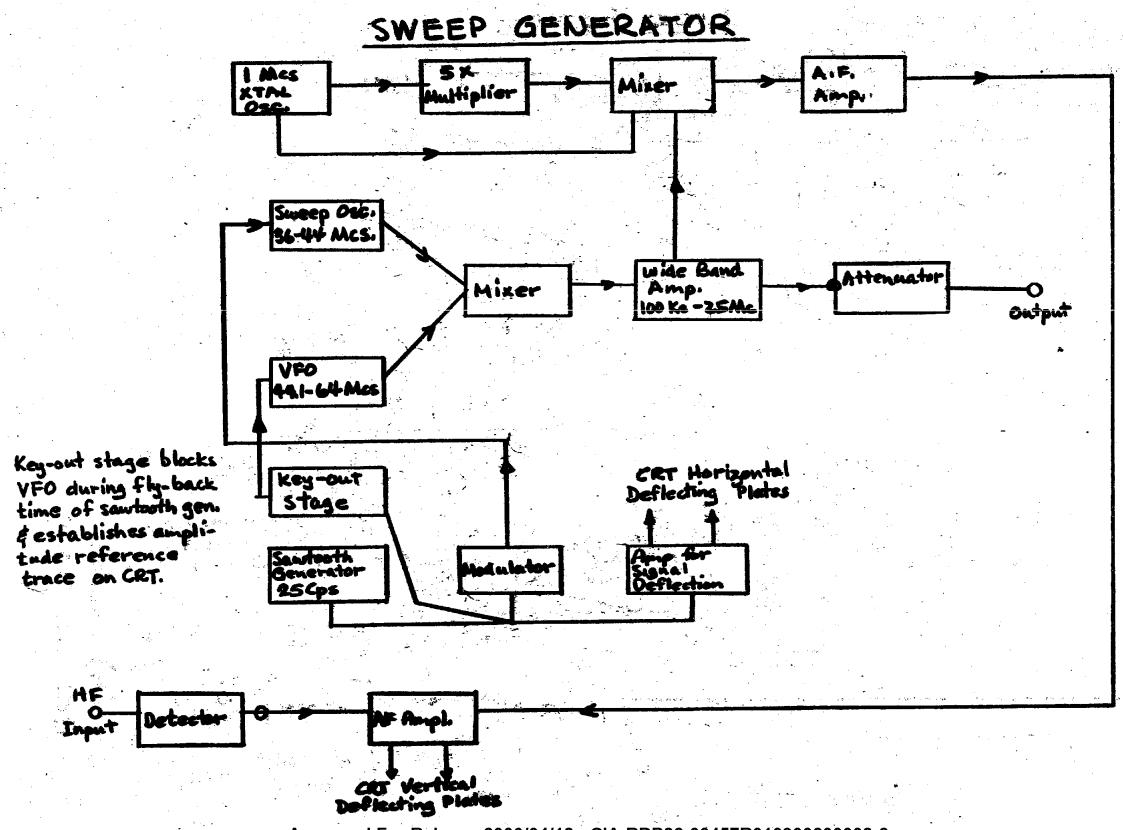
ENCLOSURE (A) Sweep Generator
ENCLOSURE (B) Spectrum Analyzer
ENCLOSURE (C) TV Transmitter Modulation Percentage Indicator
ENCLOSURE (D) Square Wave Oscillograph

-SECRET-

Enclosure (A)

SECRET- SECURITY INFORMATION



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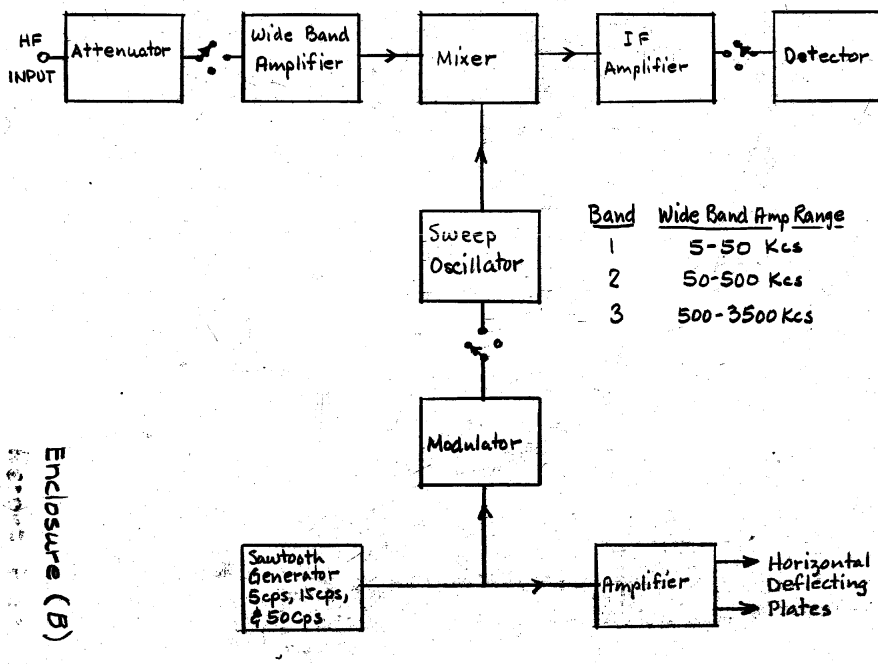
SPECTRUM ANALYZER



Band	Wide Band Amp Range	Sweep Osc. Range	I.F.
1	5-50 Kcs	65-110 Kcs	115 Kcs
2	50-500 Kcs	650-1100 Kcs	1150 Kcs
3	500-3500 Kcs	4.5 - 7.5 Mcs	8.0 Mcs

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Enclosure (B)

SECRET- SECURITY INFORMATION

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Enclosure (C)

SECRET- SECURITY INFORMATION

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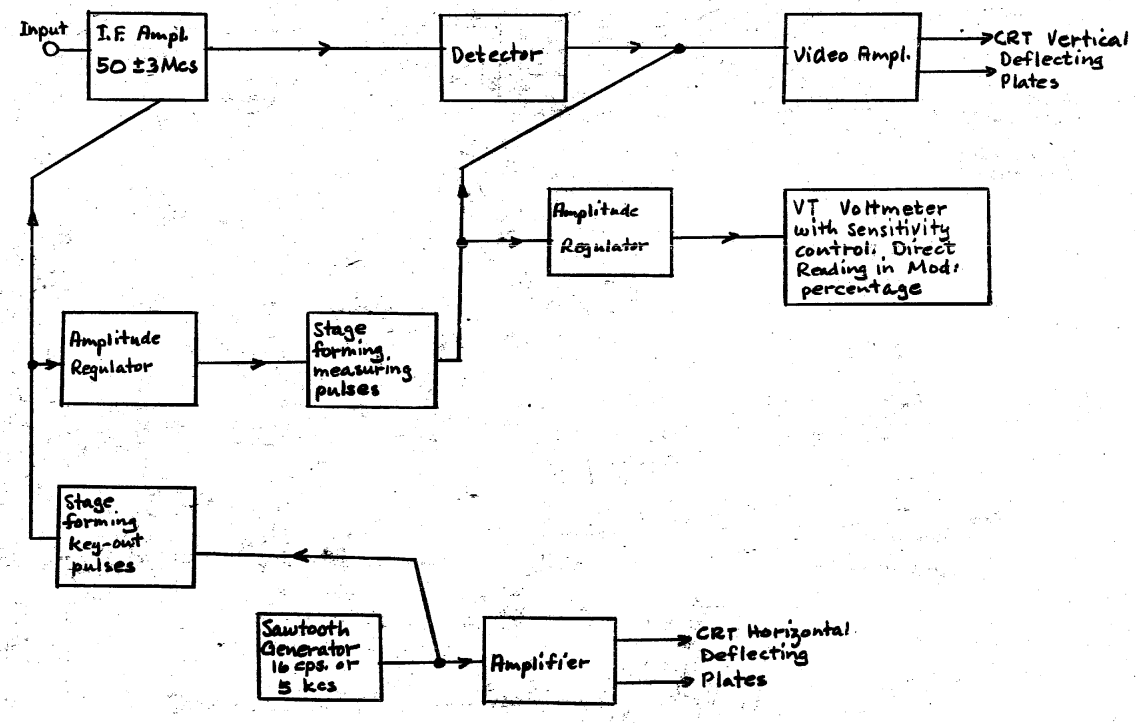
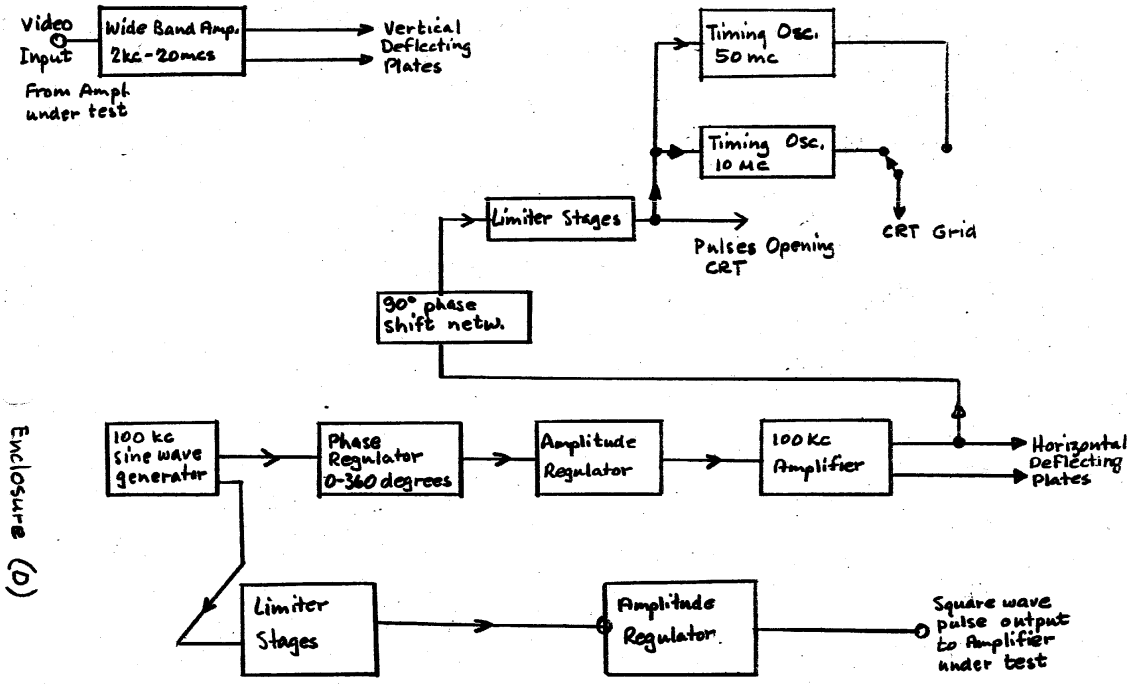
TV TRANSMITTER MODULATION PERCENTAGE INDICATOR



Enclosure (D)

SQUARE WAVE OSCILLOGRAPH



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